

REMARKS

Claims in the Application. By this amendment, Claim 6 has been cancelled from this application. Claims 73-82 have been added to this application. Claims 1, 3, 7, 18-19, 39, 45, 63 and 69 have been amended. Accordingly, Claims 1, 3-5, 7-29, 31-51, 54-55, 57-59 and 62-82 are active in this application.

Examiner's Rejection Over *Gibb*. The Examiner has rejected Claims 1, 3-7, 8-9, 11-2, 14-19, 21, 26, 29, 31-35, 39, 45, 50, 51, 54-55, 57-59, 62-64 and 69-72 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,923,714 ("*Gibb*"). This ground of rejection is traversed.

Claims 1, 3-5, 7-16, 24, 26-29, 31-44, 50-51, 57, 65-72 and 75-76 are directed to porous particulates and selectively configured porous particulate materials containing such porous particulates, wherein the porous particulates exhibit an inherent or induced permeability. Such permeability is defined on p. 10, ll. 17-19 of the originally filed specification as particulates having interconnected pore spaces such that fluids are capable of at least partially moving through the porous matrix. Thus, such porous particulates exhibit open-celled porosity.

In contrast to the open-celled porosity exhibited by the porous particulates claimed by Applicants, the porous particulates of *Gibb* are of *closed-cell* porosity. Closed-cell porosity is not interconnected porosity. The ceramic particulates of *Gibb* are those disclosed in U.S. Patent Nos. 4,680,230 and 4,632,876. Such ceramics are therein defined as exhibiting closed cell microporosity. Closed-cell porous materials have internal voids with closed walls which are not permeable to gas and liquids. This is in sharp contrast to interconnected porosity wherein there exists internal voids in the porous materials. *See*, for instance, the discussion in U.S. Patent No. 6,444,162, copy attached.

Claims 18, 25 and 77-78 reference a treatment method wherein the selectively configured porous particulates are subjected to closure stresses between from 2,500 to 10,000 psi. In contrast, the particulates of *Gibb* exhibit crush resistance only up to closure stresses of 2,000 psi.

Claims 19-23 recite a porous particulate treated with a penetrating material, coating layer or glazing layer wherein the porous particulate of the treated material is at least partially filled with air or a gas. In Claim 64, the penetrating or coating layer penetrates the porous particulate such that air is encapsulated within the pores of the particulate. Note col. 2, ll. 8-12 of the '162 Patent which states that the closed walls of closed-cell materials "are not permeable for gas and liquids." Claims 80-81 recite a selectively configured porous particulate having a penetrated layer within the porosity of the porous particulates. For reasons stated *supra*, *Gibb* does not disclose the presence of a penetrating layer since the uncoated spheroids exhibit closed cell microporosity. Thus, Claims 19-23, 64 and 80-81 cannot be anticipated by *Gibbs*.

Claims 45-49, 73-74 and 79 recite a porous particulate having a non-porous glazing material or having been treated with a non-porous penetrating layer, coating layer or glazing material wherein the apparent specific gravity of the porous particulate material is less than or equal to 2.0. The ultra lightweight porous particulates of Applicants are not disclosed in *Gibb*. The ceramic spheroids coated in *Gibb* have a much higher apparent specific gravity. Note that the exemplified ceramic spheroids of *Gibb* have a specific gravity of 2.2. *Gibb* does not disclose use of an uncoated ceramic spheroid having an apparent specific gravity (ASG) of less than 2.0 (Claim 45), much less an ASG of 1.75 (Claim 73) or 1.25 (Claim 74).

Claims 63 and 80 recite a selectively configured porous particulate material having between from about 0.5 to about 8 percent by weight of a penetrating layer, coating layer or

glazing material. The coating layer of *Gibb* is present from 10 to 60 percent by weight or the uncoated spheroid.

Examiner's Rejection Over *Gibb* and *Bourne*. The Examiner has rejected Claim 10 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* in view of U.S. Patent No. 5,964,291 ("*Bourne*"). This ground of rejection is traversed.

Gibb is deficient for the reasons stated *supra*. *Bourne* does not cure the deficiencies of *Gibb*. *Bourne* discloses a selectively configured porous particulate material having an apparent specific gravity (ASG) which is *greater than* the ASG of the porous ceramic. *Bourne* discloses porous ceramics impregnated with a chemical treatment agent such that the agent may be leached out into well fluids over time (Col. 1, ll. 29-48 and Col. 2, ll. 23-25). In contrast, the selectively configured porous particulate material of Applicants' independent Claim 1 is treated such that it may trap or encapsulate air or fluids within the porosity of the porous particulate. In so doing, the ASG of the selectively configured porous particulate is reduced when compared to the ASG of the porous particulate by itself. See, for instance, p. 17, ll. 23-27 of Applicants' specification. The chemical treatment agents of *Bourne* are heavier than air and thus the ASG of the impregnated proppant particles of *Bourne* are heavier than the ASG of the porous ceramic.

In any event, there would be no reason why one of skill in the art would have been motivated to combine the teachings of *Gibb* and *Bourne*, especially since the untreated particulates of *Gibb* exhibit closed-cell microporosity.

Examiner's Rejection Over *Gibb* and *Arnold*. The Examiner has also rejected Claim 13 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* in view of U.S. Patent No. 4,078,610 ("*Arnold*"). This ground of rejection is also traversed.

Claim 13 is dependent on Claim 1. *Arnold* does not cure the deficiencies of *Gibb* in regards to the limitations of Claim 1. *Arnold* discloses the use of polyethylene coated onto metal plated sand grains. Even if *Arnold* disclosed the claimed limitation of Claim 13, there is no reason why one of skill in the art would have been motivated to combine the teachings of *Gibb* with *Arnold*. Reconsideration is therefore requested.

Examiner's Rejection Over *Gibb* and *Brannon*. The Examiner has further rejected Claims 20, 22-25 and 47-49 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* in view of U.S. Patent No. 6,364,018 ("*Brannon*"). This ground of rejection is also traversed.

As stated *supra*, *Gibb* does not disclose the claimed selectively configured porous particulate material having a porous particulate which is at least partially filled with air or a gas. Particulates of closed-cell porosity are not permeable to gas and liquids. There is no reason why one of skill in the art would have been motivated to combine the teachings of *Gibb* with *Brannon*.

Examiner's Rejection Over *Gibb* and *Schutze*. The Examiner has also rejected Claim 27 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* in view of U.S. Patent No. 3,149,674 ("*Schutze*"). *Schutze* does not cure the stated deficiencies of *Gibb*. The Examiner states that the use of a polyolefin as a "porous particulate". Applicants respectfully disagree. *Schutze* discloses a fracturing process wherein an aggregate, such as sand, silica, limestone, flint, coke, wood, and metals (coo. 2, ll. 60-64) may be admixed with a solid polyolefin having a molecular weight from about 10,000 to about 1,000,000 (col. 1, ll. 30-37) wherein the polyolefin coats the aggregate (col. 4, ll. 60-65). *Schutze* does not state that the polyolefins are porous, much less of open cell porosity. Even if *Schutze* disclosed such porosity, there is no reason why one of skill in

the art would have been motivated to combine *Schutze* and *Gibb*. The rejection should therefore not be maintained.

Examiner's Rejection Over *Gibb* and *Ramesh*. The Examiner has also rejected Claim 28 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* in view of U.S. Patent Publication No. 2003/0050432 A1 ("*Ramesh*"). This ground of rejection is also traversed. *Ramesh* discloses a coating composition which may be derived from a lactone; the coating composition being used to improve the flexibility and to maintain the appearance of a cured film. There is no reason to conclude that the polyester coating of *Ramesh* is used to coat a porous ceramic. Even if *Ramesh* made such a disclosure, there is no reason why one of skill in the art would have been motivated to combine the teachings of *Ramesh* and *Gibb*.

Examiner's Rejection Over *Gibb* and *Todd*. The Examiner has also rejected Claims 36-37, 40-42 and 65-67 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* in view of U.S. Patent No. 6,311,773 ("*Todd*"). This ground of rejection is also traversed. *Todd* is directed to resin for consolidating particulate solids. The particulates of *Todd* are not disclosed as being porous, much less of the claimed inherent or induced permeability of Applicants. Even if *Todd* made such a disclosure, there would be no reason to combine the teachings of *Todd* with *Gibb* for reasons stated *supra*.

Examiner's Rejection Over *Gibb* and *Nguyen*. The Examiner has rejected Claims 38 and 46 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* in view of U.S. Patent No. 5,960,878 ("*Nguyen*"). This ground of rejection is traversed.

Nguyen discloses impregnating and/or coating a particulate with a tackifying compound in order to slowly release the tackifying compound onto tubular goods. *Nguyen* does not cure the

deficiencies of *Gibb*. The rejection should therefore not be maintained. Reconsideration of the rejection is therefore respectfully requested.

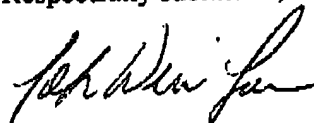
Examiner's Rejection Over *Gibb*, and *Todd* and *Irani*. The Examiner has also rejected Claims 43-44 and 68 under 35 U.S.C. § 103(a) as being unpatentable over *Gibb* and *Todd* further in view of U.S. Patent No. 5,950,727 ("*Irani*"). This ground of rejection is also traversed. *Irani*, by itself or taken with *Todd*, does not cure the deficiencies of *Gibb* as applied to Claim 1, from which Claims 43 and 44 ultimately depend. The rejection should therefore not be maintained.

Citation of Prior Art. The Examiner is respectfully requested to acknowledge citation of the prior art filed with the Supplemental Information Disclosure Statement dated November 29, 2005.

Conclusions. The Examiner is respectfully requested to telephone the undersigned should he deem it prudent to expedite the prosecution of this application.

Respectfully submitted,

Dated: April 26, 2006

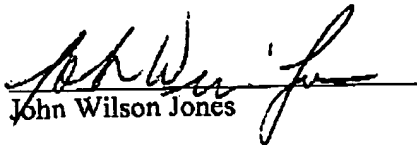


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CERTIFICATE OF TRANSMISSION, 37 C.F.R. § 1.6(d)

I hereby certify that this correspondence is being transmitted by facsimile, 571 273-8300, to Examiner Bryan Fuller c/o Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on this the 26th day of April 2006.



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